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NEW PARASITIC MITES OF THE GENUS LAELAPS.

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The genus *Laelaps* Koch, in its restricted sense, may be defined as follows: Gamasid mites in which the chelicerae are toothed, and always, in the case of the female, bear a seta on the fixed arm. Ventral plates of the female consisting of a large sternal plate, a genito-epigastric plate of varying size but frequently large and extending to the anal plate, an anal plate which is always provided with two paired and one unpaired anal setae. Dorsal shield in both sexes undivided. Genital opening of male at the anterior margin of sternum; of female in front of genito-epigastric plate and not provided with an epigynum. All members of the genus are parasitic on vertebrates, especially ground burrowing or ground nesting mammals. In the following paper nine new species are described. These species are separated as follows:

KEY TO THE SPECIES OF LAELAPS DESCRIBED IN THIS PAPER.

1. Body almost as broad as long, subdiscal; sternal pores broad openings, not mere slits; sternal setae heavy spines.....*L. hollisteri*, new species.
Body considerably longer than broad; sternal pores either slit-like or apparently wanting.....2.
2. Each chelicera with a brush of long setae just below the attachment of the movable arm.....*L. barbatus*, new species.
No brush of setae on chelicera.....3.
3. Anal plate fully twice as long as broad; anus very large, its greatest diameter being almost equal to the width of anal plate.....
L. braziliensis, new species.
Anal plate never more than one and a half times as long as broad and the greatest diameter of anus not more than equal to one-half of the width of anal plate.....4.
4. First pair of coxae with a pair of large tooth-like spines on posterior side.....*L. wetmorei*, new species.
First pair of coxae without a pair of tooth-like spines.....5.
5. Legs very stout; femur I as broad as long.....*L. rubustipes*, new species.
Legs more slender; femur I much longer than broad.....6.
6. Coxa II with a tooth-like spine on its anterior margin.....
L. californicus, new species.

- Coxa II without a tooth-like spine.....7.
7. Body with well developed shoulders opposite the second coxae.....
L. glasgowi, new species.
 Body without shoulders, the lateral margins opposite the second coxae
 being evenly curved.....8.
8. Seta on chelicera greatly inflated near its base.....*L. virginianus*, new species.
 Seta on chelicera not inflated *L. reithrodontis*, new species.

Laelaps hollisteri, new species.

Female.—Large, stout, brownish and rather heavily spined. Chelicerae small for such a large species; fixed chela shorter than the movable one, with three teeth and a simple seta about as long as the chela itself; movable chela with three teeth, two lateral and one terminal. First pair of anterior apical setae, straight, parallel; second pair, marginal and strongly recurved; third pair as close together as second pair but much longer and more strongly recurved. Body setae short, stiff, but not stout spines. Sternal plate about twice as broad as long, front margin almost straight but hind margin strongly arched, anterior corners produced into long cusps. Front pair of sternal pores broad, open, situated approximate and posterior to first pair of sternal setae; second pair of sternal pores smaller than the first pair and situated inside and slightly posterior to the second sternal setae. Sternal setae, stout, spine-like; first pair slightly smaller than the other two pairs; second pair not exactly between the first and third pairs. Genito-epigastric plate rather small and poorly chitinized, falling far short of anal plate. Anal plate triangular, slightly longer than broad; anus situated about its greatest diameter from the anterior margin; paired anal setae subequal to unpaired anal seta, situated slightly in front of posterior margin of anus; unpaired anal seta situated about half the distance from the anus to tip of anal plate. Legs very short and stout; first pair but slightly longer than second pair.

Length, 0.83 mm.; width, 0.65 mm.

Male.—Unknown.

Type host and type locality.—*Peromyscus californicus* sent to National Zoological Park from San Francisco, California.

Type slide.—Cat. No. 900, U. S. N. M.

Described from six females taken from members of the host species kept in a cage at the office of N. Hollister, superintendent of the National Zoological Park at Washington, District of Columbia. This species is of the general type of *L. agilis* Koch and *L. peruviana* Banks, but is much broader than either of these two described species, has a sternal plate of an entirely different shape and differs from them in several other characters.

Laelaps barbatus, new species.

Female.—A stout species with short legs. Chelicerae peculiar in that each has a brush of five setae situated just behind the articulation of the movable chela and on the opposite side from this brush a single large spine-like seta. Sternal plate almost twice as broad as long; each anterior corner produced into

a long slender process which extends to the base of the first coxa. Sternal pores are diagonal slits of equal length; the first pair is immediately behind the first pair of sternal setae and the second pair is immediately behind the second pair of sternal setae. Sternal setae subequal, arranged into two divergent longitudinal rows. Genito-epigastric plate longer than broad and not as broad as the space between the posterior coxae; with six setae, all marginal and the last pair situated at the posterior corners of the genito-epigastric plate. Anal plate broadly and evenly rounded in front and much prolonged posteriorly. Anus small, situated slightly less than its greater diameter from the anterior margin of anal plate; paired anal setae slightly smaller than the unpaired seta and situated slightly in front of the posterior margin of anus; unpaired seta situated almost at the tip of the anal plate and about twice its length from the anus. Legs very stout; femur II and patella II subequal and both broader than long.

Length, 0.96 mm.; width, 0.45 mm.

Male.—Unknown.

Type host and type locality.—From a lemur, Mahanoro, Madagascar.

Type.—Cat. No. 901, U. S. N. M.

Described from a single female specimen, the holotype, taken from a dried lemur skin (U. S. N. M. 63337) collected about 50 miles northwest of Mahanoro, Madagascar. The presence of a brush of setae on each chelicera differentiates this species from all others mentioned in this paper.

Laelaps braziliensis, new species.

Female.—A small, stout species. Chelicerae very stout; movable chela about twice as big as fixed chela and strongly hooked at the end; fixed chela almost straight with small teeth at its tip. First pair of anterior apical setae slightly curved, strongly divergent and twice as long as second pair. Sternal plate broader than long, with anterior corners prolonged into long spine-like processes which extend between the first and second coxae. Sternal pores slit-like; first pair slightly posterior and lateral to the first pair of setae; second pair half way between second and third pairs of sternal setae. Genito-epigastric plate small, not as broad as the distance between posterior coxae. Anal plate very long, rounded in front and attenuated behind; anus very large, rim thicker in front than at the sides, and situated not over one-fourth its greatest diameter from the anterior margin of anal plate; paired anal setae situated slightly behind the middle of the anus and about half way from the anal rim to the margin of anal plate; unpaired anal seta stouter than the paired ones and situated at the apex of anal plate. Legs stout, all shorter than the body; femur I and patella I subequal.

Length, 0.49 mm.; width, 0.29 mm.

Male.—Not known.

Type host and type locality.—*Kerodon spiki* from Bahia, Lamas, Brazil.

Type.—Cat. No. 902, U. S. N. M.

Described from a female, holotype, taken from a skin of *Kerodon spiki* ♀ (U. S. N. M. 123391), collected May 15, 1903, by A. Robert at Bahia, Lamas, Brazil. This species differs from all those known to the writer in having such a large anal opening and long anal plate.

Laelaps wetmorei, new species.

Female.—Medium sized, stout and spiny. Chelicerae stout, chelae unequal. First pair of anterior apical setae close together, straight, parallel; second pair dorsal rather than marginal and strongly recurved; third pair closer together than the second pair, longer and more strongly recurved. Sternal plate about as broad as long, broadest between coxae II and III. Sternal pores slit-like; first pair directly behind the first sternal setae, transverse; second pair about midway between second and third pairs of sternal setae, oblique. Sternal setae almost subequal and arranged into two divergent lines. Genito-epigastric plate incompletely divided into genital and epigastric plates. Epigastric plate proper broader than the space between the posterior coxae and with eight, long, subequal marginal setae. Anal plate broader than long; anus situated about two-thirds its greatest diameter from the anterior margin of the anal plate; paired anal setae situated at about the level of the posterior margin of anus, smaller than the unpaired anal seta; unpaired anal seta almost as long as the anal plate itself and situated near the tip of anal plate. Legs stout, femora I and II and patella I and II spined. Coxa I with a large tooth-like spine at its base posteriorly; coxa II with a very sharp, stout, low tooth-like spine on its anterior side; coxa III with large tooth-like spine on its postero-inner aspect; coxa IV without any tooth-like spine.

Length, 0.79 mm.; width, 0.52 mm.

Male.—Not known.

Type host and type locality.—A rat (Muridae) from Carhué, Province of Buenos Aires, Argentina.

Type slide.—Cat. No. 903, U. S. N. M.

Described from the following: Six females (type slide) from a rat (Biol. Sur. 236319) collected by A. Wetmore at Carhué, Buenos Aires Province, Argentina, Dec. 16, 1920; other females as follows, from rats by the same collector; four (Biol. Sur. 236318) at Carhué, Province of Buenos Aires, Argentina, Dec. 16, 1920; three (Biol. Sur. 236320) at Carhué, Province of Buenos Aires, Argentina, and one (Biol. Sur. 236289) at Kilometro 182, Territory of Formosa, Argentina. The tooth on coxa I in this species is very characteristic. Its large size and its position at the base of the segment at the middle of the posterior border differentiates this species, I believe, from all others of the genus.

Laelaps robustipes, new species.

Female.—A small stout species. Chelicerae moderate; movable chela curved and with three large teeth in addition to terminal hook of the element; fixed

chela smaller, straight and with a few minute teeth. Anterior apical setae all slightly curved spines; anterior pair subequal to second pair, divergent; second pair directed backwards; third pair much stouter and longer than second pair. Sternal pores, oblique slits and in the usual position; sternal setae large and subequal, anterior and posterior pairs marginal. Anal plate longer than broad; anus very large; paired anal setae slightly smaller than unpaired seta and situated in front of posterior margin of anus; unpaired anal seta situated its length from the anus and almost at the tip of anal plate. Apparently all coxae without tooth-like spines. Second pair of legs very stout; femur almost twice as broad as long; patella similar to femur but scarcely as wide; tibia as broad as long; tarsus almost twice as long as tibia and ending in a terminal hook.

Length, 0.58 mm.; width, 0.38 mm.

Male.—Not known.

Type host and type locality.—From a rodent at Guaminí, Province of Buenos Aires, Argentina.

Type slide.—Cat. No. 904, U. S. N. M.

Described from one female taken from a rodent at Guaminí, Province of Buenos Aires, Argentina. The second pair of legs in this species is stouter than in any of the other American species.

***Laelaps californicus*, new species.**

Female.—Chelicerae moderate, when extended reaching beyond the tips of palpi; both arms curved and of nearly the same length; seta leaf-like toward its base, as long as one of the arms of the chelicerae. Anterior pair of anterior apical setae, straight, divergent; second pair strongly recurved and incurved; third pair recurved but not incurved, longer than the second pair. Sternum about as broad as long; sternal setae long, slender, subequal and arranged into two divergent lines. Anal plate subtriangular, about as broad as long; anus situated about three-fourths its greatest diameter from the anterior margin of anal plate; paired anal setae situated at about the level of the middle of the anus; unpaired anal seta longer than paired anal setae and situated about one-half its length from the anus. Coxa II with a sharp, tooth-like spine on its anterior margin, all other coxae without a tooth-like spine. Legs rather slender for the genus; first pair much longer than the second pair; tarsus I but slightly longer than tibia II.

Length, 0.67 mm.; width, 0.46 mm.

Male.—Not known.

Type host and type locality.—Host (?); type locality, Topaz, Calif.

Type slide.—Cat. No. 905, U. S. N. M.

Described from ten females taken from a mouse nest (Bishop No. 7650) at Topaz, California, May 29, 1918. This species is related to *L. robustipes*, new species, but does not have the stout second pair of legs.

Laelaps glasgowi, new species.

Female.—Medium sized with well developed shoulders. Chelicerae with subequal chelae and each hooked at the tip. Anterior pair of anterior apical setae about straight, divergent; second pair strongly recurved and incurved; third pair strongly recurved and longer than second. Sternal plate about as broad as long and produced into a long, sharp cusp on each side between the second and third pairs of coxae. Sternal pores straight, oblique slits. Sternal setae subequal and arranged into two oblique rows. Anal plate about as broad as long. Legs moderate; first pair extending beyond the tips of second by almost the full length of tibiae and tarsi; tarsus I of uniform width throughout and about one and a third times as long as tibia I; tibia I slightly longer and slightly narrower than patella I; patella I and femur I subequal. Posterior pair of legs extending beyond the tip of body by about one-half their length.

Length, 0.57 mm.; width, 0.40 mm.

Male.—Unknown.

Type host and type locality.—From a "wild rat" at Urbana, Illinois.

Type.—Cat. No. 906, U. S. N. M.

Described from a female collected from a "wild rat" at Urbana, Illinois, by H. Glasgow, Dec., 1912. Related to *L. californicus*, new species, but coxa II lacks the tooth-like spine.

Laelaps virginianus, new species.

Female.—Chelicerae with chelae about equal, both hooked at the tips; movable chela with three teeth, fixed chela with two teeth; seta on chelicera inflated for its basilar half and curved at its tip. First pair of anterior apical setae straight, divergent; second pair recurved and incurved until their apices meet; third pair longer than second and strongly recurved. Sternal pores curved slits, second pair obliquely situated midway between second and third pairs of sternal setae; sternal setae long, slightly curved, subequal and arranged into two divergent rows. Genito-ventral plate with a single pair of setae, extending half way to the anal plate. Anal plate sub-triangular with broadly rounded sides; anus situated about three-fourths its greatest diameter from the front margin of anal plate; paired anal setae situated considerably in front of level of posterior margin of anus; unpaired anal seta longer than paired anal setae and situated at about two-thirds the distance from the anus to the tip of anal plate. First pair of legs much longer than second pair; tarsus I slightly longer than tibia I.

Length, 0.73 mm.; width, 0.42 mm.

Male.—Unknown.

Type host and type locality.—From a "wild mouse" at East Falls Church, Virginia.

Type.—Cat. No. 907, U. S. N. M.

Described from a female specimen taken from a mouse trapped at East Falls Church, Virginia, Sept. 19, 1919, by the writer. This species is related to *L. glasgowi*, new species, but has not the shoulders.

Laelaps reithrodontis, new species.

Female.—Chelicerae moderate; movable chela larger than fixed chela and each provided with two teeth. Sternal plate broader than long and projecting between second and third coxae in the form of long, chitinous cusps. Sternal pores, oblique, curved slits, in their usual position. Sternal setae subequal, in two oblique rows; first pair situated directly on the anterior margin of sternal plate. Genito-epigastric plate extending over half way to anal plate and about as broad as the latter. Anal plate as broad as long; anus situated about two-thirds its greatest diameter from the anterior margin of anal plate; paired anal setae situated about opposite to the middle of the anus; unpaired anal setae situated slightly nearer the apex of anal plate than the posterior margin of anus. None of the coxae with a tooth-like spine. Tarsus I about one and a third times as long as tibia I and with a pseudosegment at the base that is twice as broad as long. Tibia II but slightly longer than patella II.

Length, 0.77 mm.; width, 0.44 mm.

Male.—Not known.

Type host and type locality.—From *Reithrodon cuniculoides* at Huanuluan, Territory of Río Negro, Argentina.

Type.—Cat. No. 908, U. S. N. M.

Described from a single female (holotype) taken from a female skin of *Reithrodon cuniculoides* (U. S. N. M. 238125) collected at Huanuluan, Territory of Río Negro, Argentina.

ON THE TYPES OF "PYRAUSTA" CAFFREII FLINT & MALLOCH (LEPIDOPTERA: PYRALIDAE: PYRAUSTINAE).

BY WM. BARNES AND F. H. BENJAMIN, *Decatur, Illinois*.

Loxostege ("Pyrausta") *caffreii* Flint & Malloch, Bull. Ill. N. H. Surv., XIII, 1920, p. 304, ff. 43-44, (*Pyrausta*).

The type male and allotype female which served for the original description of *caffreii* are before the authors through the kindness of Dr. Frison of the Illinois Natural History Survey. Heinrich (Ent. News, XXXII, 1921, p. 57) is correct in the statement that *caffreii* belongs in *Loxostege* and that the male type is *similalis* Gn. It probably represents the same form as *rantalis* Gn. but the specimen is too rubbed to be sure, and the name *rantalis* has little significance.

The female represents the species going under the name of *obliteralis* Wlk. (*marculenta* G. & R.). The authors are not certain of the identity of the Walker name with that species placed under it (*marculenta*) in all North American collections.